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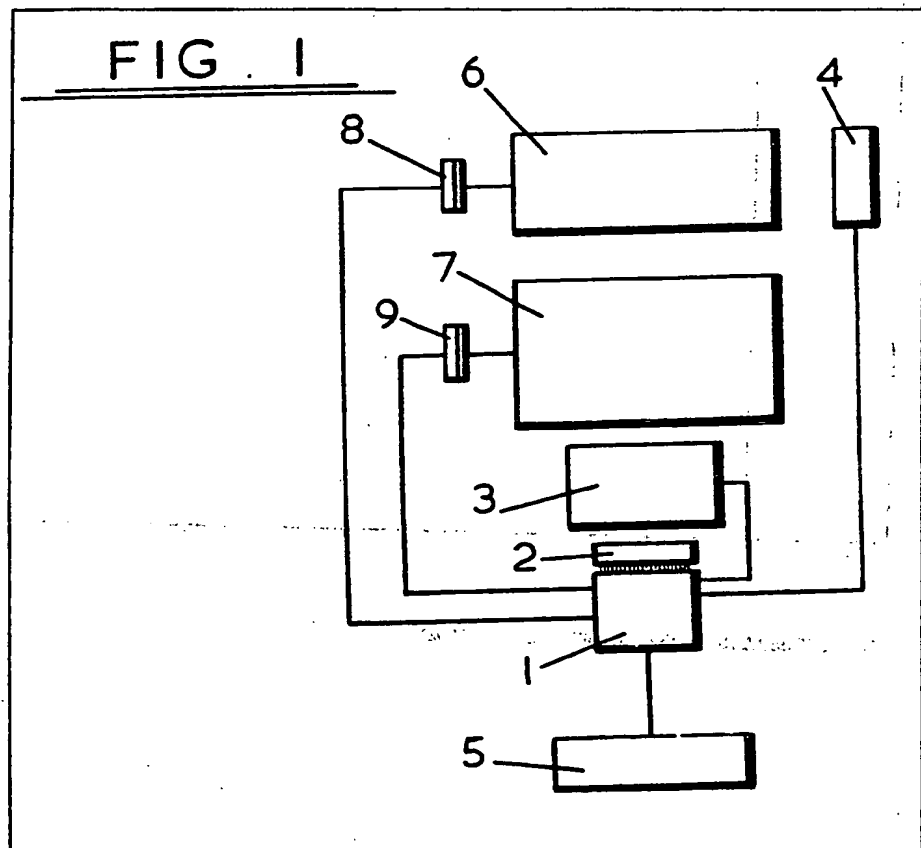
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(54) Amusement machines

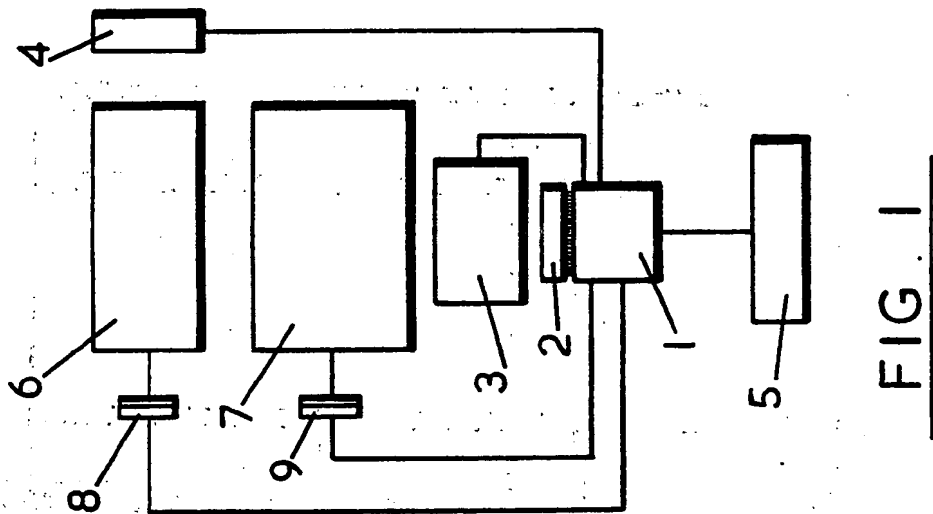
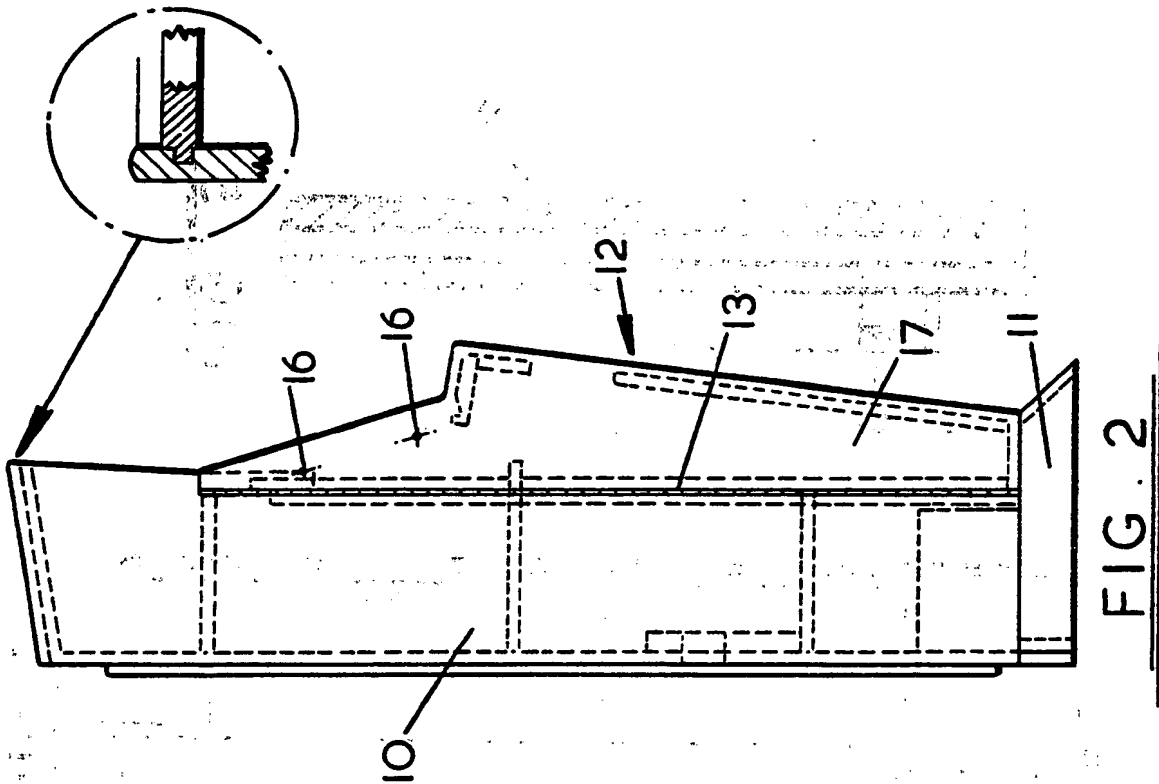
(57) An amusement machine comprising a cabinet, a display panel 7 mounted in the cabinet, an electronic controller including a main processor unit 1 and a subsidiary unit 2 plugged into the main processor, the main processor unit determining the basic characteristics of the game to be played on the machine and the subsidiary unit determining secondary features of the game, and machine controls actuatable by a person using the machine and connected to the main processor unit, the main

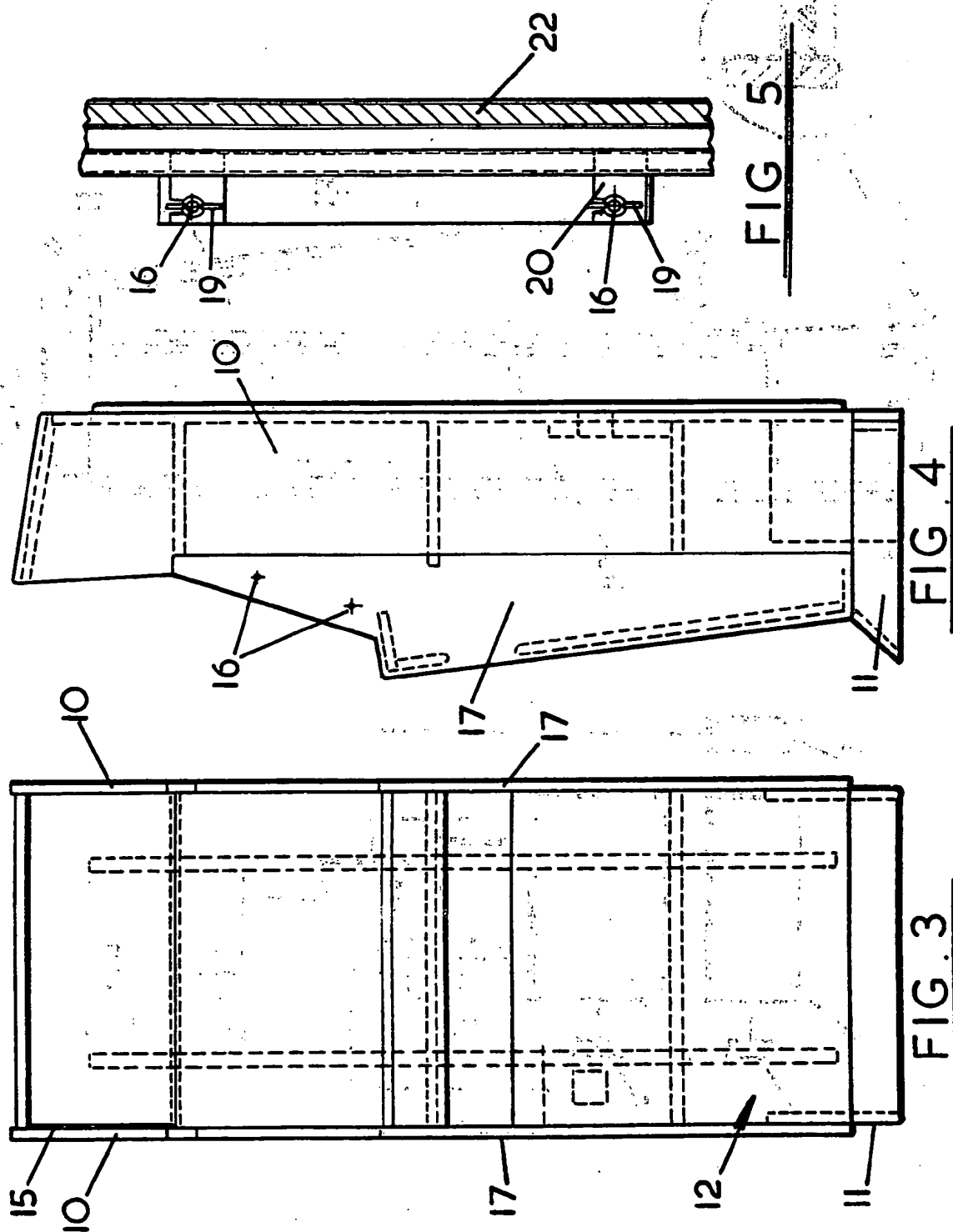
processor unit being connected to display devices mounted on the display panel. The main processor is connected at least one to the display devices by a multiway cable incorporating a multiway connector to enable the electrical separation of the display devices mounted on the display panel and the main processor unit. The display panel is mounted in the cabinet so as to be readily removable, and the subsidiary unit matches the response of the controller to a particular display panel, whereby the features of a game may be altered merely by replacing the display panel and the subsidiary unit.



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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.





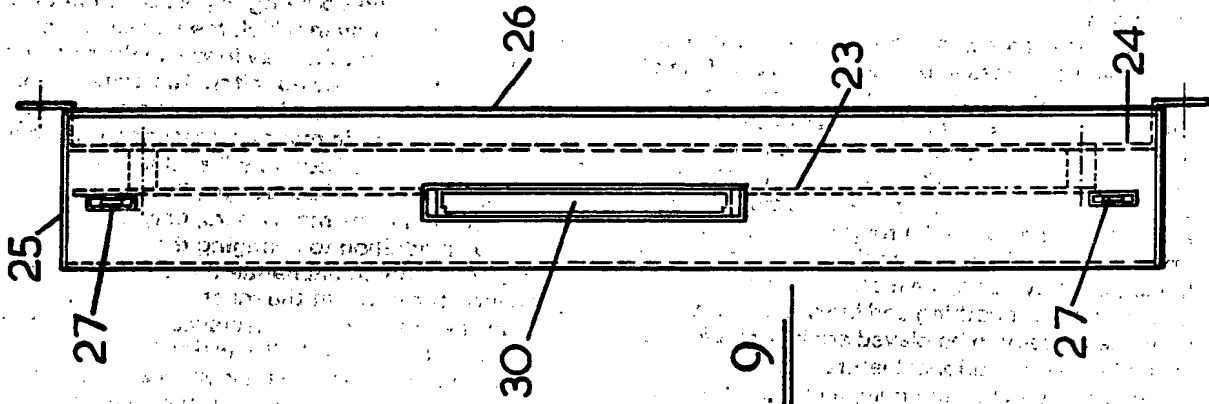


FIG. 9

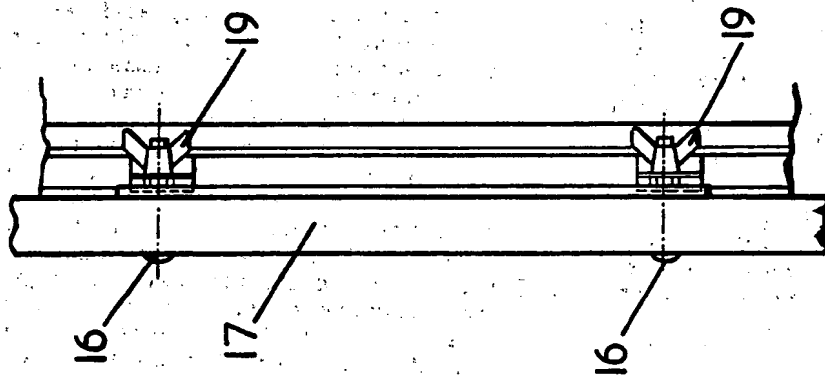


FIG. 7

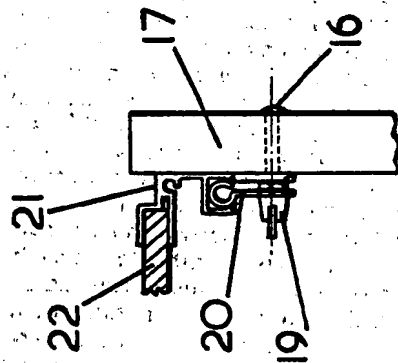


FIG. 6

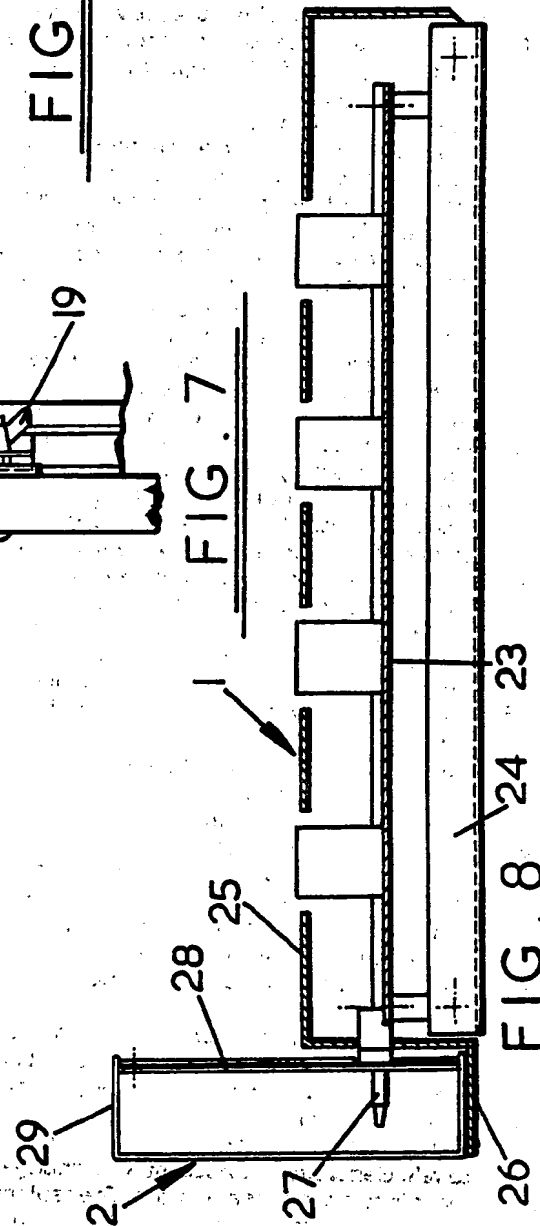


FIG. 8

## SPECIFICATION

## Amusement machines

The present invention relates to amusement machines.

5 Amusement machines are widely installed in clubs, public houses and similar premises. One of the most popular types of machine comprises three rotating wheels on which various symbols are mounted. Each time the machine is played a  
10 coin is deposited, and the wheels are rotated and then brought to a halt such that one symbol from each wheel is displayed through a window in the front of the machine. Depending on the identity of the displayed symbols, the machine either pays out  
15 a prize, pays out nothing and indicates that the machine is ready to be played again, or indicates that a further operational feature of the machine can be actuated. For example, on many machines a further operational feature provides for any one  
20 or more of the wheels to be held whilst the others are rotated. Such further operational features can normally only be actuated after an initial rotation of each of the wheels.

The profit made from any machine is entirely  
25 dependent upon the amount it is used which in turn is dependent upon its popularity with potential players. To a very large extent popularity is determined by the further operational features which are provided. Current machines may have  
30 for example a "win a nudge" feature, a "royal flush" feature, or a "mate a fruit" feature. The "win a nudge" feature superimposes on selected wheel symbols an additional symbol (e.g. W, I, N, on the left, centre and right wheels) when these additional  
35 symbols are displayed simultaneously one or more of the wheels may subsequently be rotated by one symbol (i.e. nudged). Thus a player can convert a non-winning displayed line into a winning line by moving one or more of the wheels. It is necessary  
40 to display when a 'nudge' has been won and/or stored for future use; The 'royal flush' feature provides a series of areas labelled for example 0, 40, 80 etc. which can be illuminated at random or in sequence. When the displayed symbols indicate  
45 a win, the areas are illuminated one after the other and the player has to stop the sequence. When he does so, the prize won will be that identified by the illuminated area, e.g. forty pence if the "40" area is illuminated. The "mate a fruit" feature also  
50 sequentially illuminates a series of areas, but these areas are identified by symbols identical to those on the rotatable wheels. If a win is gained by having three identical symbols displayed on the wheels simultaneously, the winnings are doubled  
55 if the area carrying the same symbol is illuminated also.

When the regular users of amusement machines in a particular location do not like the features provided by the machines, or become  
60 bored with the machines, it is necessary to provide new features if the takings of the machines are not to fall. Generally it is necessary to change machines every three months. The replaced machines are returned to a workshop and updated

65 with new features so that they can be sent out again, or machines are moved from one location to another.

Many of the basic functions of the machines do not alter despite updating of particular features. In  
70 particular the way in which the wheels are driven and stopped, and the way in which their positions are monitored, does not alter. Accordingly it is known to provide an electronic game controller comprising a main microprocessor board and a  
75 plug in "features" board. When it is desired to change features of a machine, it is not necessary to replace the the main board, only the "features" board. In addition to changing the game controller, it is necessary to dismantle the machine cabinet to  
80 change the panel of the machine on which the machines features are displayed and this in turn requires alterations to the wiring loom interconnecting the display panel and the game controller. In practice it is necessary to virtually  
85 rebuild a machine when its features are altered.

Because of the extent of the alterations required when the features of a machine are changed, it has always been considered essential to return machines to a central workshop for  
90 alteration. This involves considerable expense as personnel and transport are required to physically move the bulky machines to and from the workshop, and a large number of spare machines are required to permit immediate replacement of  
95 one machine with another updated machine. Furthermore the hand-rewiring of the machines occupies skilled labour for considerable periods.

It is an object of the present invention to provide an amusement machine the features of  
100 which can be altered quickly and easily on site.

According to the present invention there is provided an amusement machine comprising a cabinet, at least one display panel mounted in the cabinet, an electronic controller including a main  
105 processor unit and a subsidiary unit plugged into the main processor, the main processor unit determining the basic characteristics of the game to be played on the machine and the subsidiary unit determining secondary features of the game, machine controls actuable by a person using the  
110 machine and connected to the main processor unit, and means connecting the main processor unit to display devices mounted on said at least one display panel, characterised in that the connecting means comprise at least one multiway  
115 cable incorporating a multiway connector to enable the electrical separation of the display devices mounted on said at least one display panel and the main processor unit, the said at least one  
120 display panel is mounted in the cabinet so as to be readily removable, and the subsidiary unit comprises means for matching the response of the controller to a particular display panel connected thereto via the multiway cable, whereby the  
125 features of a game may be altered merely by replacing the said at least one display panel and the subsidiary unit.

The invention enables a fitter to visit the premises at which a machine is located, replace

the display panel and subsidiary unit with appropriate updated components in a matter of minutes; and return to the workshop only those components which have been replaced. This procedure is much cheaper than the procedures described above which have been followed in the past.

Many currently available machines have two display panels as this improves the machines appearance, for example a plaque which identifies the game and a glass panel which carries information about the actual game being played. Where two or more such display panels are provided, each has to be connected to the main processor unit via a multiway connector to enable easy replacement.

The subsidiary unit is preferably enclosed in a cover to protect it from damage and to assist handling. Guide pins may be provided to assist in the correct location of the subsidiary unit relative to the main processor.

An embodiment of the present invention will now be described; by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic diagram of components of an amusement machine incorporating the present invention;

Figs. 2, 3 and 4 are respectively left side, front and right side views of a cabinet for a machine incorporating the invention;

Figs. 5, 6 and 7 illustrate the way in which a glass display panel is fixed onto the cabinet of Figs. 2 to 4; and

Figs. 8 and 9 illustrate the arrangement of a main processor unit and a subsidiary unit of an embodiment of the invention.

Referring to Fig. 1, the basic components of an embodiment of the invention are shown, excluding the machine cabinet. The entire game is run by a controller comprising a main processor 1 and a subsidiary unit 2 which is plugged into the main processor 1. The controller causes the operation of a rotating wheel unit 3, monitors the positions assumed by each wheel when their rotation is stopped, and determines the further course of a particular game on the basis of those determined positions. The controller is enabled by a coin mechanism 4 and responds where appropriate to the actuation of a control unit 5 accessible to the person playing the game. The type of game is identified by a plaque 6 and the course of each game is displayed on a display panel 7. It will be noted that all components are connected to the main processor 1.

The structure described so far is no different from conventional machines. However in accordance with the present invention multiway connectors 8, 9 are provided to enable the electrical separation of the plaque 6 and display panel 7 from the main processor 1. In addition the panel 7 and plaque 6 are mounted in a cabinet (not shown) in a way which allows their easy removal, and the subsidiary unit 2 is arranged to match the response of the controller as a whole to

the particular panel 6 and plaque 7.

With the prior machines, it was necessary to change the panel 6 and plaque 7, remove the wiring loom connecting them to the main processor, and then rewire the connections between the main processor and the panel and plaque. This was necessary so that appropriate points on the display panel for example were connected to particular terminals of the main processor. With the machine of the invention, no rewiring is required. It is simply a question of swapping parts and making a few plug connections.

Referring to Figs. 2, 3 and 4, the illustrated cabinet comprises side panels 10 supported on a plinth 11, a front portion 12 which may be swung open on a piano-type hinge 13, and an upper panel 14 hinged at 15. Bolts 16 extend through side panels 17 of the hinged front portion 12 to secure a display panel as described below. A plaque (not shown) is secured centrally of the hinged panel 14.

Referring now to Figs. 5, 6 and 7, the bolts 16 secure a fixing bar 18 to the sides 17 of the hinged cabinet front. Wing nuts 19 secure a fitting 20 to the bolts 16, the fitting 20 slidably engaging in a channel defined by an extruded frame 21. A further channel in the frame 21 receives the edge of a sheet of glass 22 which constitutes the display panel of the machine. The glass generally supports an appropriate design and illumination devices.

Referring now to Figs. 8 and 9, the main processor 1 (see Fig. 1) comprises a printed circuit board 23 on which the necessary electronic components are mounted in known manner and a heatsink 24 secured to the circuit board. A cover 25 extends over the circuit board and defines a ledge 26 on which the subsidiary unit 2 (see Fig. 1) is located. Locating guides 27 extend through the cover 25 and engage in slots (not shown) in the unit 2.

The unit 2 comprises a circuit board 28 mounted inside a cover 29. Connections to the main processor are made via a 64 way connector 30.

In practice, when the features of a machine are to be changed, a fitter arrives on the premises at which the machine is located with a replacement subsidiary unit 2, a replacement display panel 22 (7 in Fig. 1), and a replacement plaque (6 in Fig. 1). The display panel and plaque are electrically isolated by breaking connectors 8 and 9 (typically connectors 8 and 9 will be 15 and 12 way connectors respectively). The display panel 22 is then removed with its frame 21 by undoing wing nuts 19. The plaque which may be mounted in a similar way to the display panel is also removed. Then the subsidiary unit 2 is removed. The new components are secured in the cabinet, connectors 8 and 9 are connected, and the machine is ready for use.

The front-opening of the cabinet greatly facilitates access to the interior of the machine.

The covers over the controller, and particularly

that over the subsidiary unit, avoids any possible damage to the circuits or danger to the fitter. In addition the locating guides ensure that the subsidiary unit is correctly positioned relative to the main processor prior to engagement of the 64 way connector.

The embodiment of the invention described above comprises an electro-mechanical display device but it will be appreciated that alternative display devices may be provided. For example, the display presented to the player may be an image on a video screen or in the form of a panel selected portions of which are illuminated.

The invention is also applicable to "multi-menu" machines which enable a player to play more than one game on one machine.

#### CLAIMS

1. An amusement machine comprising a cabinet, at least one display panel mounted in the cabinet, an electronic controller including a main processor unit and a subsidiary unit plugged in to the main processor, the main processor unit determining the basic characteristics of the game to be played on the machine and the subsidiary unit determining secondary features of the game, machine controls actuable by a person using the machine and connected to the main processor unit; and means connecting the main processor unit to display devices mounted on said at least one display panel, characterised in that the

connecting means comprise at least one multiway cable incorporating a multiway connector to enable the electrical separation of the display devices mounted on said at least one display panel and the main processor unit, the said at least one display panel is mounted in the cabinet so as to be readily removable, and the subsidiary unit comprises means for matching the response of the controller to a particular display panel, whereby the features of a game may be altered merely by replacing the said at least one display panel and the subsidiary unit.

2. An amusement machine according to claim 1, comprising two display panels one of which identifies the game and the other of which carries information about the actual game being played, where each panel is connected to the main processor unit via a multiway connector.

3. An amusement machine according to claim 1 or 2, comprising a front-opening cabinet in which the or each display panel is mounted.

4. An amusement machine according to any preceding claim, wherein the subsidiary unit is enclosed in a protective cover.

5. An amusement machine according to claim 4, wherein guide pins are provided to assist in the correct location of the subsidiary unit relative to the main processor.

6. An amusement machine substantially as hereinbefore described with reference to the accompanying drawings.

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